PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF TRANSMITTAL
OF COPIES OF TRANSLATION
OF THE INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY
(CHAPTER I OR CHAPTER II
OF THE PATENT COOPERATION TREATY)
(PCT Rules 44*bis*.3(c) and 72.2)

To:

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Date of mailing *(day/month/year)* 11 January 2007 (11.01.2007)	
Applicant's or agent's file reference D3-X0311P	**IMPORTANT NOTIFICATION**
International application No. PCT/JP2005/004485	International filing date *(day/month/year)* 15 March 2005 (15.03.2005)
Applicant DNAVEC RESEARCH INC. et al	

1. **Transmittal of the translation to the applicant.**

☐ The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).

☑ The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

2. **Transmittal of the copy of the translation to the designated or elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

EP, KR

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

3. **Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

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TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416
D3-X0311P		
International application No.	International filing date (*day/month/year*)	Priority date (*day/month/year*)
PCT/JP2005/004485	15.03.2005	16.03.2004

International Patent Classification (IPC) or national classification and IPC

A61K45/00, A61K31/7105, A61K35/76, A61K48/00, A61P35/00

Applicant

DNAVEC RESEARCH INC.

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☐ (*sent to the applicant and to the International Bureau*) a total of _____ sheets, as follows:

      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ (*sent to the International Bureau only*) a total of (indicate type and number of electronic carrier(s))

      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☒	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2005/004485

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (Rule 12.3 and 23.1(b))

☐ publication of the international application (Rule 12.4)

☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☒ the international application as originally filed/furnished

☐ the description:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the claims:

nos. _____ as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* _____ received by this Authority on _____

nos.* _____ received by this Authority on _____

☐ the drawings:

sheets _____ as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

☒ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2005/004485

Box No. III **Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 1-8

because:

☒ the said international application, or the said claims Nos. 1-8 relate to the following subject matter which does not require an international preliminary examination (*specify*):

Claims 1 to 8 pertain to methods for the treatment of the human body by therapy, and thus relate to a subject matter for which it is not necessary to carry out an international preliminary examination under the provisions in Rule 67.1(iv) of the Regulations Under the PCT.

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____ are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 1-8

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form
- ☐ has not been furnished
- ☐ does not comply with the standard

the computer readable form
- ☐ has not been furnished
- ☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See Supplemental Box for further details.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2005/004485

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	11-17	YES
	Claims	9, 10	NO
Inventive step (IS)	Claims		YES
	Claims	9-17	NO
Industrial applicability (IA)	Claims	9-17	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The following documents are cited in the international search report.

Document 1: C. BEHL et al., "Autoinduction of platelet derived growth factor (PDGF) A-chain mRNA expression in a human malignant melanoma cell line and growth inhibitory effects of PDGF-A-chain mRNA-specific antisense molecules," Biochemical and Biophysical Research Communications, 15 June 1993, Vol. 193, No. 2, pages 744 to 751

Document 2: WO 1995/16032 A1 (Biognostik Gesellschaft fur Biomolekulare Diagnostik mbH), 15 June 1995

Document 3: Geraldine SIEGFRIED et al., "The Proteolytic Processing of Pro-Platelet-derived Growth Factor-A at RRKR86 by Members of the Proprotein Convertase Family is Functionally Correlated to Platelet-derived Growth Factor-A-induced Functions and Tumorigenicity," Cancer Research, 2003, Vol. 63, No. 7, pages 1458 to 1463

Document 4: J. TIESMAN et al., "Identification of a Soluble Receptor for Platelet-derived Growth

Factor in Cell-conditioned Medium and Human Plasma," Journal of Biological Chemistry, 1993, Vol. 268, No. 13, pages 9621 to 9628

Document 5: WO 2003/072704 A2 (Ribozyme Pharmaceuticals, Inc.), 04 September 2003

Document 6: WO 2003/029475 A1 (DNAVEC Research Inc.), 10 April 2003

Explanations

The inventions set forth in claims 9 and 10 lack novelty in the light of documents 1 to 3 cited in the international search report.

Document 1 indicates that PDGF-α receptors were detected in melanoma cells from the human malignant melanoma cell line HTZ19; indicates that the administration of PDGF-AA homodimers enhanced the cell proliferation of HTZ19 melanoma cells; indicates that antisense phosphorothioate-oligodeoxynucleotides (S-ODN's) specifically targeted against PDGF-A-chain mRNA reduce the cell proliferation of HTZ19 melanoma cells; and suggests that the PDGF-AA homodimer is an autocrine growth factor of HTZ19 melanoma cells.

Meanwhile, document 2 indicates that the antisense nucleotide and derivatives thereof which hybridize with a domain in the mRNA and/or DNA that encodes PDGF-A are useful for the treatment and/or prevention of tumors.

Furthermore, document 3 indicates that inhibitors capable of inhibiting the proprotein convertases (PCs) that are associated with the conversion of Pro-PDGF-A into PDGF-A, which contributes to the formation of tumors, may constitute a novel drug for the treatment of

tumors induced by PDGF-A; likewise, said document also indicates that targeting PDGF-A cleavage may provide a pharmacological complement that could be effective in the treatment of malignant tumors induced by PDGF.

The inventions set forth in claims 10 to 17 do not involve an inventive step in the light of documents 1 to 6 cited in the international search report.

Document 4 presents secretory proteins that bind to PDGFRα, and describes a technique for adjusting the responsiveness of said proteins to PDGF.

Meanwhile, document 5 presents the siRNAs of the PDGFR gene and the PDGFRα gene, while also indicating that said siRNAs are effective in the treatment of various tumors.

Furthermore, document 6 indicates that the Sendai virus vector is used as an immunological virus vector against infectious diseases or cancer, and said vector is introduced into dendritic cells.

It is common practice for a person skilled in the art to select specific active components, vectors and cells that are appropriate for use in a pharmaceutical preparation and to determine the specific type of tumor to be treated by means of said pharmaceutical preparation after consideration of the purpose thereof. Such being the case, it is considered to have been easy for a person skilled in the art to configure the inventions set forth in claims 10 to 17 by specifying specific combinations of the abovementioned items.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2005/004485

Supplemental Box Relating to Sequence Listing

Continuation of Box No. I, item 2:

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this report was established on the basis of:

   a. type of material

   ☒ a sequence listing

   ☐ table(s) related to the sequence listing

   b. format of material

   ☐ in written format

   ☒ in computer readable form

   c. time of filing/furnishing

   ☒ contained in the international application as filed

   ☐ filed together with the international application in computer readable form

   ☐ furnished subsequently to this Authority for the purposes of search and/or examination

   ☐ received by this Authority as an amendment* on _____

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

* *If item 4 in Box No. I applies, the listing and/or table(s) related thereto, which form part of the basis of the report, may be marked "superseded."*